

SEQUENCE LISTING

<110> Tang, Y. Tom
 Zhou, Ping
 Goodrich, Ryle
 Liu, Chenghua
 Asundi, Vinod
 Ren, Feiyan
 Zhao, Qing A.
 Yang, Yonghong
 Wehrman, Tom
 Drmanac, Radoje T.

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 Polypeptides

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| Leu | Ser | Arg | Gln | Ile | Thr | Ser | Pro | Val | Ser | Gly | Ile | Asn | Gly | Asp | Ile | |
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| Cys | Glu | Leu | Pro | Leu | Asp | Asp | Gln | Val | Ala | Leu | Leu | Arg | Ala | His | Ala | |
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| Gly | Glu | His | Leu | Leu | Leu | Gly | Ala | Thr | Lys | Arg | Ser | Met | Val | Phe | Lys | |
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| Asp | Val | Leu | Leu | Leu | Gly | Asn | Asp | Tyr | Ile | Val | Pro | Arg | His | Cys | Pro | |
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| Glu | Leu | Ala | Glu | Met | Ser | Arg | Val | Ser | Ile | Arg | Ile | Leu | Asp | Glu | Leu | |
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| Val | Leu | Pro | Phe | Gln | Glu | Leu | His | Ile | Asp | Asp | Asn | Glu | Tyr | Ala | Tyr | |
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| ctc | aaa | gcc | atc | atc | ttc | ttt | gac | cca | gat | gcc | aag | ggg | ctg | agc | gat | 969 |
| Leu | Lys | Ala | Ile | Ile | Phe | Phe | Asp | Pro | Asp | Ala | Lys | Gly | Leu | Ser | Asp | |
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| Glu Gln Ile Gln Phe Ile Lys Leu Phe Gly Met Ala Lys Ile Asp Asn | | | |
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| Ala His His Pro Leu His Pro His Leu Met Gln Glu His Met Gly Thr | | | |
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| aac gtc atc gtt gcc aac aca atg ccc act cac ctc agc aac gga cag | | | 1305 |
| Asn Val Ile Val Ala Asn Thr Met Pro Thr His Leu Ser Asn Gly Gln | | | |
| 405 | 410 | 415 | |
| atg tgt gag tgg ccc cga ccc agg gga cag gca gcc acc cct gag acc | | | 1353 |
| Met Cys Glu Trp Pro Arg Pro Arg Gly Gln Ala Ala Thr Pro Glu Thr | | | |
| 420 | 425 | 430 | |
| cca cag ccc tca ccg cca ggt ggc tca ggg tct gag ccc tat aag ctc | | | 1401 |
| Pro Gln Pro Ser Pro Pro Gly Gly Ser Gly Ser Glu Pro Tyr Lys Leu | | | |
| 435 | 440 | 445 | |
| ctg ccg gga gcc gtc gcc aca atc gtc aag ccc ctc tct gcc atc ccc | | | 1449 |
| Leu Pro Gly Ala Val Ala Thr Ile Val Lys Pro Leu Ser Ala Ile Pro | | | |
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| Gln Pro Thr Ile Thr Lys Gln Glu Val Ile * | | | |
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 Met Glu Pro
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 Glu Thr Ala Leu Trp Gly Pro Asp Leu Gln Gly Pro Glu Gln Ser Pro
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 Asn Asp Ala His Arg Gly Ala Glu Ser Glu Asn Glu Glu Glu Ser Pro
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| cag Gln | gac Asp | ccc Pro | tct Ser | gtc Val | ccc Pro | cag Gln | aac Asn | ccc Pro | cca Pro | acc Thr | cca Pro | ctg Leu | ggt Gly | cac His | tcc Ser | 475 |
| | | | 70 | | | | | 75 | | | | | 80 | | | |
| aat Asn | ccc Pro | ttg Leu | gac Asp | cac His | cag Gln | atc Ile | ccc Pro | ctg Leu | gac Asp | ccc Pro | cca Pro | gcc Ala | ccg Pro | gag Glu | gta Val | 523 |
| | | | 85 | | | | | 90 | | | | | 95 | | | |
| gtc Val | cct Pro | acc Thr | cca Pro | tct Ser | gac Asp | tgg Trp | acc Thr | aag Lys | gcc Ala | tgc Cys | gag Glu | gcc Ala | agc Ser | tgg Trp | cag Gln | 571 |
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| gag Glu | ccc Pro | agc Ser | ctg Leu | cgg Arg | gag Glu | ctg Leu | gtg Val | cag Gln | ggc Gly | cgc Arg | ccg Pro | gcg Ala | ggg Gly | gcg Ala | gag Glu | 667 |
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| aag Lys | ccc Pro | tac Tyr | atc Ile | tgc Cys | aac Asn | gag Glu | tgc Cys | ggc Gly | aag Lys | agc Ser | ttc Phe | agc Ser | cag Gln | tgg Trp | tcc Ser | 715 |
| | | | 150 | | | | | 155 | | | | | 160 | | | |
| aag Lys | ctg Leu | ctg Leu | cgg Arg | cac His | cag Gln | cgc Arg | atc Ile | cac His | acg Thr | gga Gly | gag Glu | cgg Arg | ccc Pro | aac Asn | acc Thr | 763 |
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| tgc Cys | tcc Ser | gag Glu | tgc Cys | ggc Gly | aag Lys | agc Ser | ttc Phe | acg Thr | cag Gln | agc Ser | tcg Ser | cac His | ctg Leu | gtg Val | cag Gln | 811 |
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| cac His | cag Gln | cgc Arg | acg Thr | cac His | acc Thr | ggc Gly | gag Glu | aag Lys | ccc Pro | tac Tyr | aag Lys | tgc Cys | ccc Pro | gac Asp | tgc Cys | 859 |
| | | | 200 | | | | | 205 | | | | | 210 | | | |
| ggc Gly | aag Lys | tgc Cys | ttc Phe | agc Ser | tgg Trp | agc Ser | tcc Ser | aac Asn | ctg Leu | gtg Val | cag Gln | cac His | cag Gln | cgc Arg | acg Thr | 907 |
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| cac His | acg Thr | gga Gly | gaa Glu | gag Glu | ccc Pro | tac Tyr | aag Lys | tgc Cys | acg Thr | gag Glu | tgc Cys | gag Glu | ata Ile | gcc Ala | ttc Phe | 955 |
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| acc Thr | cag Gln | agc Ser | acc Thr | aac Asn | ctc Leu | atc Ile | aag Lys | cac His | cag Gln | cga Arg | tcc Ser | cac His | acc Thr | ggc Gly | gag Glu | 1003 |
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| aag Lys | ccc Pro | tac Tyr | aag Lys | tgc Cys | ggc Gly | gag Glu | tgc Cys | cgc Arg | cgg Arg | gct Ala | ttc Phe | tac Tyr | cgc Arg | agc Ser | tcg Ser | 1051 |
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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Asn | Leu | Ile | Thr | His | Val | Arg | Thr | His | Met | Asp | Glu | Asn | Leu | Phe | Val | |
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| tgc | tcc | gac | tgc | ggg | aag | gcc | ttc | ctg | gaa | gcc | cac | gag | ctg | gag | cag | 1819 |
| Cys | Ser | Asp | Cys | Gly | Lys | Ala | Phe | Leu | Glu | Ala | His | Glu | Leu | Glu | Gln | |
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| cac | cgg | gtg | atc | cat | gag | agg | ggg | aag | acc | cca | gcg | cgt | agg | gcc | cag | 1867 |
| His | Arg | Val | Ile | His | Glu | Arg | Gly | Lys | Thr | Pro | Ala | Arg | Arg | Ala | Gln | |
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| ggc | gac | agc | ctg | ctg | ggg | ctc | ggg | gac | ccc | tcc | ctg | ctg | acc | ccg | ccg | 1915 |
| Gly | Asp | Ser | Leu | Leu | Gly | Leu | Gly | Asp | Pro | Ser | Leu | Leu | Thr | Pro | Pro | |
| | | 550 | | | | | 555 | | | | | 560 | | | | |
| ccg | gga | gcc | aag | ccg | cac | aag | tgt | ctc | gtg | tgc | gga | aag | ggc | ttc | aac | 1963 |
| Pro | Gly | Ala | Lys | Pro | His | Lys | Cys | Leu | Val | Cys | Gly | Lys | Gly | Phe | Asn | |
| | 565 | | | | | 570 | | | | | 575 | | | | | |
| gac | gag | ggc | atc | ttc | atg | caa | cat | cag | agg | atc | cac | atc | gga | gaa | aac | 2011 |
| Asp | Glu | Gly | Ile | Phe | Met | Gln | His | Gln | Arg | Ile | His | Ile | Gly | Glu | Asn | |
| 580 | | | | | 585 | | | | | 590 | | | | | 595 | |
| ccc | tac | aaa | aat | gca | gac | ggc | ctc | atc | gca | cac | gca | gcc | ccc | aaa | cct | 2059 |
| Pro | Tyr | Lys | Asn | Ala | Asp | Gly | Leu | Ile | Ala | His | Ala | Ala | Pro | Lys | Pro | |
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| cct | cag | tta | cga | tcc | cca | agg | ctc | cct | ttc | aga | ggg | aat | tcc | tac | ccc | 2107 |
| Pro | Gln | Leu | Arg | Ser | Pro | Arg | Leu | Pro | Phe | Arg | Gly | Asn | Ser | Tyr | Pro | |
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| ggg | gct | gcg | gag | ggc | aga | gcg | gag | gcc | ccc | gga | cag | ccc | ctt | aag | ccg | 2155 |
| Gly | Ala | Ala | Glu | Gly | Arg | Ala | Glu | Ala | Pro | Gly | Gln | Pro | Leu | Lys | Pro | |
| | | 630 | | | | | 635 | | | | | 640 | | | | |
| ccg | gag | ggt | cag | gag | ggc | ttc | agc | cag | agg | cgg | ggg | ctg | ctg | tcc | tcc | 2203 |
| Pro | Glu | Gly | Gln | Glu | Gly | Phe | Ser | Gln | Arg | Arg | Gly | Leu | Leu | Ser | Ser | |
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| aag | acc | tac | atc | tgc | tcc | cac | tgc | gga | gag | agc | ttc | ctg | gat | cgc | tct | 2251 |
| Lys | Thr | Tyr | Ile | Cys | Ser | His | Cys | Gly | Glu | Ser | Phe | Leu | Asp | Arg | Ser | |
| 660 | | | | | 665 | | | | | 670 | | | | | 675 | |
| gtg | ctc | ctc | cag | cat | cag | ctc | acc | cac | ggc | aac | gaa | aag | ccc | ttt | ctc | 2299 |
| Val | Leu | Leu | Gln | His | Gln | Leu | Thr | His | Gly | Asn | Glu | Lys | Pro | Phe | Leu | |
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| ttt | cct | gat | tat | aga | att | ggc | cta | ggg | gaa | ggc | gca | ggg | ccc | agc | ccc | 2347 |
| Phe | Pro | Asp | Tyr | Arg | Ile | Gly | Leu | Gly | Glu | Gly | Ala | Gly | Pro | Ser | Pro | |
| | | | 695 | | | | 700 | | | | | | 705 | | | |
| ttc | tta | agt | ggg | aag | ccc | ttt | aaa | tgc | cct | gaa | tgc | aaa | caa | agc | ttt | 2395 |
| Phe | Leu | Ser | Gly | Lys | Pro | Phe | Lys | Cys | Pro | Glu | Cys | Lys | Gln | Ser | Phe | |
| | | 710 | | | | | 715 | | | | | 720 | | | | |
| ggc | ctc | agc | tct | gag | ctg | ctg | ctg | cac | cag | aaa | gtc | cat | gca | ggc | ggg | 2443 |
| Gly | Leu | Ser | Ser | Glu | Leu | Leu | Leu | His | Gln | Lys | Val | His | Ala | Gly | Gly | |

| 725 | | | | 730 | | | | 735 | | | | | | | | |
|-------------|-------------|-------------|------------|------------|------------|------------|------------|-----|-----|-----|-----|-----|-----|-----|-----|------|
| aag | agc | tcc | cag | aag | agt | cca | gag | ctg | ggg | aag | agc | tct | tcc | gtc | ctc | 2491 |
| Lys | Ser | Ser | Gln | Lys | Ser | Pro | Glu | Leu | Gly | Lys | Ser | Ser | Ser | Val | Leu | |
| 740 | | | | 745 | | | | | | 750 | | | | | 755 | |
| ctg | gag | cat | ctc | agg | agc | ccc | ctg | ggg | gcc | aga | ccc | tac | cgc | tgc | tca | 2539 |
| Leu | Glu | His | Leu | Arg | Ser | Pro | Leu | Gly | Ala | Arg | Pro | Tyr | Arg | Cys | Ser | |
| | | | 760 | | | | | | 765 | | | | | 770 | | |
| gat | tgc | agg | gcc | tcc | ttc | ctc | gac | cgc | gtg | gcc | ctc | acc | cgg | cac | caa | 2587 |
| Asp | Cys | Arg | Ala | Ser | Phe | Leu | Asp | Arg | Val | Ala | Leu | Thr | Arg | His | Gln | |
| | | | 775 | | | | | | 780 | | | | 785 | | | |
| gaa | acc | cac | acc | cag | gaa | aaa | ccc | ccc | aat | ccc | gag | gac | ccc | cct | cca | 2635 |
| Glu | Thr | His | Thr | Gln | Glu | Lys | Pro | Pro | Asn | Pro | Glu | Asp | Pro | Pro | Pro | |
| | | | 790 | | | | 795 | | | | | | 800 | | | |
| gag | gca | gtc | acc | ctg | tcc | aca | gat | cag | gaa | ggg | gag | ggc | gag | acc | cct | 2683 |
| Glu | Ala | Val | Thr | Leu | Ser | Thr | Asp | Gln | Glu | Gly | Glu | Gly | Glu | Thr | Pro | |
| | | | 805 | | | | 810 | | | | | | 815 | | | |
| acc | ccc | aca | gag | agc | agc | agc | cat | ggg | gaa | ggg | caa | aac | ccc | aaa | acc | 2731 |
| Thr | Pro | Thr | Glu | Ser | Ser | Ser | His | Gly | Glu | Gly | Gln | Asn | Pro | Lys | Thr | |
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| cta | gtg | gaa | gaa | aag | ccc | tat | ctg | tgc | ccc | gag | tgt | gga | gcc | ggc | ttc | 2779 |
| Leu | Val | Glu | Glu | Lys | Pro | Tyr | Leu | Cys | Pro | Glu | Cys | Gly | Ala | Gly | Phe | |
| | | | 840 | | | | | | 845 | | | | | 850 | | |
| aca | gaa | gtc | gca | gcc | ctc | ctg | ctc | cat | agg | agc | tgc | cac | cca | ggg | gtc | 2827 |
| Thr | Glu | Val | Ala | Ala | Leu | Leu | Leu | His | Arg | Ser | Cys | His | Pro | Gly | Val | |
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| Ser | Leu | * | | | | | | | | | | | | | | |
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| Leu | Pro | Pro | Asp | Ser | Ser | Glu | Ala | Glu | Ile | Ile | Asp | Glu | Ile | Leu | Lys | |
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| Val | Asp | Gly | Val | Thr | Asp | Ile | Asn | Leu | Gly | Lys | Leu | Val | Arg | Gly | Asp | |
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| Ala | His | Glu | Cys | Phe | Val | Ser | Pro | Val | Ala | Lys | Ala | Val | Ile | Glu | Leu | |
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| Leu | Glu | Lys | Ser | Val | Gly | Val | Asn | Leu | Asp | Gly | Lys | Lys | Ile | Leu | Val | |
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| Val | Gly | Ala | His | Gly | Ser | Leu | Glu | Ala | Ala | Leu | Gln | Cys | Leu | Phe | Gln | |
| | | | 120 | | | | | 125 | | | | | 130 | | | |
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| Arg | Lys | Gly | Ser | Met | Thr | Met | Ser | Ile | Gln | Trp | Lys | Thr | Arg | Gln | Leu | |
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| Gln | Ser | Lys | Leu | His | Glu | Ala | Asp | Ile | Val | Val | Leu | Gly | Ser | Pro | Lys | |
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| Pro | Glu | Glu | Ile | Pro | Leu | Thr | Trp | Ile | Gln | Pro | Gly | Thr | Thr | Val | Leu | |
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| Asn | Cys | Ser | His | Asp 185 | Phe | Leu | Ser | Gly | Lys 190 | Val | Gly | Cys | Gly | Ser 195 | Pro | | |
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| Arg | Ile | His | Phe 200 | Gly | Gly | Leu | Ile | Glu 205 | Glu | Asp | Asp | Val | Ile 210 | Leu | Leu | | |
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| Gln 245 | Pro | Leu | Ser | Pro 250 | Val | Pro | Ser | Asp | Ile | Glu 255 | Ile | Ser | Arg | Gly | Gln 260 | | |
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| Asp | Glu | Ile | Glu 280 | Ile | Tyr | Gly | Lys | Ser 285 | Lys | Ala | Lys | Val | Arg 290 | Leu | Ser | | |
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| Ile 325 | Gly | Leu | Val | Gln | Ala 330 | Leu | Thr | Ala | His | Leu 335 | Asn | Val | Asn | Ser | Phe 340 | | |
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| Gly | Ala | Ala 360 | Gly | Gly | Gly | Tyr | Ala | Gln 365 | Val | Ile | Pro | Met | Glu 370 | Glu | Phe | | |
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| Asn | Leu 375 | His | Leu | Thr | Gly | Asp 380 | Ile | His | Ala | Ile | Thr | Ala 385 | Ala | Asn | Asn | | |
| ttg | ctg | gct | gcc | gcc | atc | gac | acg | agg | att | ctt | cat | gaa | aac | acg | caa | | 1856 |
| Leu | Leu 390 | Ala | Ala | Ala | Ile | Asp 395 | Thr | Arg | Ile | Leu | His 400 | Glu | Asn | Thr | Gln | | |
| aca | gat | aag | gct | ctg | tat | aat | cgg | ctg | gtt | cct | tta | gtg | aat | ggg | gtc | | 1904 |
| Thr | Asp | Lys | Ala | Leu | Tyr | Asn | Arg | Leu | Val | Pro | Leu | Val | Asn | Gly | Val | | |

| | | | | |
|---|-----|-----|-----|------|
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| aat aag act gat ccg agc aca ctg aca gaa gag gaa gtg agt aaa ttt | | | | 2000 |
| Asn Lys Thr Asp Pro Ser Thr Leu Thr Glu Glu Glu Val Ser Lys Phe | 440 | 445 | 450 | |
| gcc cgt ctc gac atc gac cca tct acc atc acg tgg cag aga gta ttg | | | | 2048 |
| Ala Arg Leu Asp Ile Asp Pro Ser Thr Ile Thr Trp Gln Arg Val Leu | 455 | 460 | 465 | |
| gat aca aat gac cga ttt cta cga aaa ata acc atc ggg cag gga aac | | | | 2096 |
| Asp Thr Asn Asp Arg Phe Leu Arg Lys Ile Thr Ile Gly Gln Gly Asn | 470 | 475 | 480 | |
| aca gag aag ggc cat tac cgg cag gcg cag ttt gac atc gca gtg gcc | | | | 2144 |
| Thr Glu Lys Gly His Tyr Arg Gln Ala Gln Phe Asp Ile Ala Val Ala | 485 | 490 | 495 | 500 |
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| Ser Glu Ile Met Ala Val Leu Ala Leu Thr Asp Ser Leu Ala Asp Met | 505 | 510 | 515 | |
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| Lys Ala Arg Leu Gly Arg Met Val Val Ala Ser Asp Lys Ser Gly Gln | 520 | 525 | 530 | |
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| Pro Val Thr Ala Asp Asp Leu Gly Val Thr Gly Ala Leu Thr Val Leu | 535 | 540 | 545 | |
| atg aaa gat gca ata aaa cca aac ctg atg cag acc ctg gaa ggg aca | | | | 2336 |
| Met Lys Asp Ala Ile Lys Pro Asn Leu Met Gln Thr Leu Glu Gly Thr | 550 | 555 | 560 | |
| cct gtg ttc gtg cat gcg ggc cct ttt gct aac att gct cac ggc aac | | | | 2384 |
| Pro Val Phe Val His Ala Gly Pro Phe Ala Asn Ile Ala His Gly Asn | 565 | 570 | 575 | 580 |
| tct tca gtg ttg gct gat aaa att gcc ctg aaa ctg gtt ggt gaa gaa | | | | 2432 |
| Ser Ser Val Leu Ala Asp Lys Ile Ala Leu Lys Leu Val Gly Glu Glu | 585 | 590 | 595 | |
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| Gly Phe Val Val Thr Glu Ala Gly Phe Gly Ala Asp Ile Gly Met Glu | 600 | 605 | 610 | |
| aaa ttc ttc aac atc aag tgc cga gct tcc ggc ttg gtg ccc aac gtg | | | | 2528 |
| Lys Phe Phe Asn Ile Lys Cys Arg Ala Ser Gly Leu Val Pro Asn Val | 615 | 620 | 625 | |
| gtt gtg tta gtg gca acg gtg cga gct ctg aag atg cat gga ggc ggg | | | | 2576 |
| Val Val Leu Val Ala Thr Val Arg Ala Leu Lys Met His Gly Gly Gly | 630 | 635 | 640 | |

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| aac Asn | atc Ile | cag Gln | ctg Leu | gtg Val 665 | gca Ala | gac Asp | ggc Gly | tgc Cys | tgt Cys 670 | aac Asn | ctc Leu | cag Gln | aag Lys | caa Gln | att Ile 675 | 2672 |
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| ttc Phe | aag Lys | acc Thr | gac Asp | acc Thr | cgc Arg | gct Ala | gag Glu | att Ile | gac Asp | ttg Leu | gtg Val | tgt Cys | gag Glu | ctt Leu | gca Ala | 2768 |
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| ggg Gly 725 | gga Gly | aaa Lys | gga Gly | tcg Ser | gtg Val | gac Asp | ttg Leu | gct Ala | cgg Arg | gct Ala | gtg Val | aga Arg | gag Glu | gct Ala | gcg Ala 740 | 2864 |
| agt Ser | aaa Lys | aga Arg | agc Ser | cga Arg | ttc Phe | cag Gln | ttc Phe | ctg Leu | tat Tyr | gat Asp | gtt Val | cag Gln | gtt Val | cca Pro | att Ile 755 | 2912 |
| gtg Val | gac Asp | aag Lys | ata Ile | agg Arg | acc Thr | att Ile | gct Ala | cag Gln | gct Ala | gtc Val | tat Tyr | gga Gly | gcc Ala | aaa Lys | gat Asp | 2960 |
| att Ile | gaa Glu | ctc Leu | tct Ser | cct Pro | gag Glu | gca Ala | caa Gln | gcc Ala | aaa Lys | ata Ile | gat Asp | cgt Arg | tac Tyr | act Thr | caa Gln | 3008 |
| cag Gln | ggg Gly | ttt Phe | gga Gly | aat Asn | ttg Leu | ccc Pro | atc Ile | tgc Cys | atg Met | gca Ala | aag Lys | acc Thr | cac His | ctt Leu | tct Ser | 3056 |
| cta Leu 805 | tct Ser | cac His | caa Gln | cct Pro | gac Asp | aaa Lys | aaa Lys | ggg Gly | gtg Val | cca Pro | agg Arg | gac Asp | ttc Phe | atc Ile | tta Leu 820 | 3104 |
| cct Pro | atc Ile | agt Ser | gac Asp | gtc Val | cgg Arg | gcc Ala | agc Ser | ata Ile | ggc Gly | gct Ala | ggg Gly | ttc Phe | att Ile | tac Tyr | cct Pro | 3152 |
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 Thr Asn Asp Tyr Asn Leu Ala Gln Asp Leu Tyr Leu Ala Ser Ser Cys
 65 70 75
 cct att gct gcc ctg gag atg aga agg gat tta cag cat tgg gac agt 290
 Pro Ile Ala Ala Leu Glu Met Arg Arg Asp Leu Gln His Trp Asp Ser
 80 85 90
 gct cta caa ctg gca aag cat ttg gcc cca gac cag ata cct ttt ata 338
 Ala Leu Gln Leu Ala Lys His Leu Ala Pro Asp Gln Ile Pro Phe Ile
 95 100 105 110
 tca aaa gaa tat gct att cag ctt gaa ttc gcg ggt gat tat gta aat 386
 Ser Lys Glu Tyr Ala Ile Gln Leu Glu Phe Ala Gly Asp Tyr Val Asn
 115 120 125
 gct ttg gct cat tat gag aaa gga ata aca ggt gat aat aag gaa cat 434
 Ala Leu Ala His Tyr Glu Lys Gly Ile Thr Gly Asp Asn Lys Glu His
 130 135 140
 gat gaa gct tgt ctg gct gga gtg gcc cag atg tcc ata aga atg gga 482
 Asp Glu Ala Cys Leu Ala Gly Val Ala Gln Met Ser Ile Arg Met Gly

| | | | | | | | | | | | | | | | | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------|
| | 145 | | | | | 150 | | | | | 155 | | | | | |
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| | 160 | | | | | 165 | | | | | 170 | | | | | |
| ctt Leu | aaa Lys | aga Arg | gac Asp | tgt Cys | gga Gly | gcc Ala | ata Ile | ttg Leu | gag Glu | aat Asn | atg Met | aag Lys | caa Gln | ttt Phe | tca Ser | 578 |
| | 180 | | | | | 185 | | | | | 190 | | | | | |
| gaa Glu | gcg Ala | gcc Ala | caa Gln | ctg Leu | tat Tyr | gaa Glu | aaa Lys | ggg Gly | ctc Leu | tac Tyr | tac Tyr | gat Asp | aaa Lys | gca Ala | gca Ala | 626 |
| | 195 | | | | | 200 | | | | | 205 | | | | | |
| tct Ser | gtt Val | tac Tyr | atc Ile | cgc Arg | tct Ser | aag Lys | aat Asn | tgg Trp | gca Ala | aaa Lys | gtt Val | ggg Gly | gat Asp | ctt Leu | ctg Leu | 674 |
| | 210 | | | | | 215 | | | | | 220 | | | | | |
| ccc Pro | cac His | gtt Val | tct Ser | tct Ser | cct Pro | aag Lys | atc Ile | cat His | ttg Leu | cag Gln | tat Tyr | gcc Ala | aaa Lys | gcc Ala | aag Lys | 722 |
| | 225 | | | | | 230 | | | | | 235 | | | | | |
| gaa Glu | gca Ala | gat Asp | gga Gly | aga Arg | tac Tyr | aaa Lys | gaa Glu | gct Ala | gtt Val | gta Val | gct Ala | tat Tyr | gaa Glu | aat Asn | gca Ala | 770 |
| | 240 | | | | | 245 | | | | | 250 | | | | | |
| aaa Lys | cag Gln | tgg Trp | caa Gln | agt Ser | gta Val | atc Ile | cgc Arg | atc Ile | tat Tyr | ctg Leu | gat Asp | cac His | ctc Leu | aat Asn | aat Asn | 818 |
| | 255 | | | | | 260 | | | | | 265 | | | | | |
| cct Pro | gaa Glu | aaa Lys | gct Ala | gtc Val | aat Asn | att Ile | gtt Val | aga Arg | gag Glu | acc Thr | cag Gln | tct Ser | ctg Leu | gat Asp | gga Gly | 866 |
| | 275 | | | | | 280 | | | | | 285 | | | | | |
| gcc Ala | aaa Lys | atg Met | gta Val | gcc Ala | agg Arg | ttt Phe | ttt Phe | cta Leu | cag Gln | ctt Leu | ggg Gly | gac Asp | tat Tyr | ggg Gly | tct Ser | 914 |
| | 290 | | | | | 295 | | | | | 300 | | | | | |
| gcc Ala | atc Ile | cag Gln | ttt Phe | ctt Leu | gtc Val | atg Met | tcc Ser | aaa Lys | tgc Cys | aac Asn | aat Asn | gaa Glu | gct Ala | ttc Phe | aca Thr | 962 |
| | 305 | | | | | 310 | | | | | 315 | | | | | |
| ctg Leu | gct Ala | cag Gln | caa Gln | cac His | aac Asn | aaa Lys | atg Met | gaa Glu | atc Ile | tat Tyr | gca Ala | gat Asp | att Ile | att Ile | ggg Gly | 1010 |
| | 320 | | | | | 325 | | | | | 330 | | | | | |
| tct Ser | gaa Glu | gac Asp | act Thr | act Thr | aat Asn | gaa Glu | gac Asp | tat Tyr | caa Gln | agc Ser | att Ile | gcc Ala | tta Leu | tac Tyr | ttt Phe | 1058 |
| | 335 | | | | | 340 | | | | | 345 | | | | | |
| gaa Glu | gga Gly | gaa Glu | aag Lys | aga Arg | tat Tyr | ctt Leu | cag Gln | gct Ala | gga Gly | aaa Lys | ttc Phe | ttc Phe | ttg Leu | ctg Leu | tgt Cys | 1106 |
| | 355 | | | | | 360 | | | | | 365 | | | | | |
| ggc Gly | caa Gln | tat Tyr | tca Ser | cga Arg | gca Ala | ctt Leu | aaa Lys | cac His | ttc Phe | ctg Leu | aaa Lys | tgc Cys | cca Pro | agc Ser | tcg Ser | 1154 |
| | 370 | | | | | 375 | | | | | 380 | | | | | |

| | |
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| gaa gat aat gtg gca ata gaa atg gca att gaa act gtt ggt cag gcc | 1202 |
| Glu Asp Asn Val Ala Ile Glu Met Ala Ile Glu Thr Val Gly Gln Ala | |
| 385 390 395 | |
| aaa gat gaa ctg ctg acc aat cag ctg ata gac cat ctc ctg ggg gag | 1250 |
| Lys Asp Glu Leu Leu Thr Asn Gln Leu Ile Asp His Leu Leu Gly Glu | |
| 400 405 410 | |
| aac gat agc atg cct aag gat gcc aag tac ctg ttc cgc ttg tac atg | 1298 |
| Asn Asp Ser Met Pro Lys Asp Ala Lys Tyr Leu Phe Arg Leu Tyr Met | |
| 415 420 425 430 | |
| gct ctg aag caa tac cga gaa gct gcc cag act gcc atc atc att gcc | 1346 |
| Ala Leu Lys Gln Tyr Arg Glu Ala Ala Gln Thr Ala Ile Ile Ile Ala | |
| 435 440 445 | |
| aga gaa gag cag tct gca ggc aac tac cgg aat gca cac gat gtt ctc | 1394 |
| Arg Glu Glu Gln Ser Ala Gly Asn Tyr Arg Asn Ala His Asp Val Leu | |
| 450 455 460 | |
| ttc agt atg tat gca gaa ctg aaa tcc cag aag atc aaa att ccc tcc | 1442 |
| Phe Ser Met Tyr Ala Glu Leu Lys Ser Gln Lys Ile Lys Ile Pro Ser | |
| 465 470 475 | |
| gag atg gcc acc aac ctc atg att ctg cac agc tat ata cta gta aga | 1490 |
| Glu Met Ala Thr Asn Leu Met Ile Leu His Ser Tyr Ile Leu Val Arg | |
| 480 485 490 | |
| ttc atg tta aaa atg gag atc aca tga aaggg gctcgcacgc tcattcgggt | 1542 |
| Phe Met Leu Lys Met Glu Ile Thr * | |
| 495 500 | |
| ggccaacaac atcagcaaat ttccatcaca cattgtaccc atcctgacgt caactgtgat | 1602 |
| tgagtgtcac agggcaggcc tgaagaactc tgctttcagc ttcgcagcta tgttgatgag | 1662 |
| gcctgaatac cgcagcaaaa tagatgccaa atacaaaaag aagatcgagg gaatggtcag | 1722 |
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| Ala Glu Met Asn Arg Leu Gly Met Met Val Asp Leu Ser His Val Ser | |
| 195 200 205 210 | |
| | |
| gat gct gtg gca cgg cgg gcc ctg gaa gtg tca cag gca cct gtg atc | 908 |
| Asp Ala Val Ala Arg Arg Ala Leu Glu Val Ser Gln Ala Pro Val Ile | |
| 215 220 225 | |
| | |
| ttc tcc cac tcg gct gcc cgg ggt gtg tgc aac agt gct cgg aat gtt | 956 |
| Phe Ser His Ser Ala Ala Arg Gly Val Cys Asn Ser Ala Arg Asn Val | |
| 230 235 240 | |
| | |
| cct gat gac atc ctg cag ctt ctg aag aag aac ggt ggc gtc gtg atg | 1004 |
| Pro Asp Asp Ile Leu Gln Leu Leu Lys Lys Asn Gly Gly Val Val Met | |
| 245 250 255 | |
| | |
| gtg tct ttg tcc atg gga gta ata cag tgc aac cca tca gcc aat gtg | 1052 |
| Val Ser Leu Ser Met Gly Val Ile Gln Cys Asn Pro Ser Ala Asn Val | |
| 260 265 270 | |
| | |
| tcc act gtg gca gat cac ttc gac cac atc aag gct gtc att gga tcc | 1100 |
| Ser Thr Val Ala Asp His Phe Asp His Ile Lys Ala Val Ile Gly Ser | |
| 275 280 285 290 | |
| | |
| aag ttc atc ggg att ggt gga gat tat gat ggg gcc ggc aag tac agg | 1148 |
| Lys Phe Ile Gly Ile Gly Gly Asp Tyr Asp Gly Ala Gly Lys Tyr Arg | |
| 295 300 305 | |
| | |
| aag aaa aca aag tgc aaa gcc cct tgg agg aca agt tcc cgg atg agc | 1196 |
| Lys Lys Thr Lys Cys Lys Ala Pro Trp Arg Thr Ser Ser Arg Met Ser | |
| 310 315 320 | |
| | |
| agc tga gcagttcctg ccactccgac ctctcacgtc tgcgtcagag acagagtctg | 1252 |
| Ser * | |
| | |
| acttcaggcc aggaactcac tgagattccc atacactgga cagccaagtt accagccaag | 1312 |
| | |
| tggtcagttct cagagtcctc ccccccatg gccccagttc ttgcagttgt ggccaccttc | 1372 |
| | |
| ccagtcctta ttctgtggct ctgatgaccc agttaagtcc gccagatgtc actgtagcaa | 1432 |
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| gccacagaca cccacaaaag ttcccctggt gtgcaggcac aaatatttcc tgaaataaat | 1492 |
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[illegible]

24

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| ttt | gac | ctc | agt | aat | ttg | caa | aac | aat | tat | gcc | cat | ttg | acc | aac | agc | 729 |
| Phe | Asp | Leu | Ser | Asn | Leu | Gln | Asn | Asn | Tyr | Ala | His | Leu | Thr | Asn | Ser | |
| | | | 215 | | | | 220 | | | | | | 225 | | | |
| agc | atc | aat | aaa | tcc | ggg | gcc | tct | tat | gag | aag | atc | aaa | gaa | gtg | att | 777 |
| Ser | Ile | Asn | Lys | Ser | Gly | Ala | Ser | Tyr | Glu | Lys | Ile | Lys | Glu | Val | Ile | |
| | | | 230 | | | | 235 | | | | | | 240 | | | |
| ggt | cat | ggt | tgt | aaa | tgg | acg | ctc | agc | aga | ttt | ttt | tcc | tac | ctt | cgt | 825 |
| Gly | His | Gly | Cys | Lys | Trp | Thr | Leu | Ser | Arg | Phe | Phe | Ser | Tyr | Leu | Arg | |
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| agc | tgg | gat | gtg | gac | gat | ctg | ctt | ttg | tgg | aag | aaa | atc | cac | cgc | atg | 873 |
| Ser | Trp | Asp | Val | Asp | Asp | Leu | Leu | Leu | Trp | Lys | Lys | Ile | His | Arg | Met | |
| 260 | | | | | | 265 | | | | | | 270 | | | 275 | |
| gtt | att | ctc | acc | att | ctc | gcc | att | gca | cca | tct | gtc | ccc | ttt | gct | gcc | 921 |
| Val | Ile | Leu | Thr | Ile | Leu | Ala | Ile | Ala | Pro | Ser | Val | Pro | Phe | Ala | Ala | |
| | | | 280 | | | | | | 285 | | | | | | 290 | |
| aat | tgc | ttt | gag | ctc | ttt | ggg | ttt | gat | att | ttg | att | gat | gac | aac | ttg | 969 |
| Asn | Cys | Phe | Glu | Leu | Phe | Gly | Phe | Asp | Ile | Leu | Ile | Asp | Asp | Asn | Leu | |
| | | | 295 | | | | | | 300 | | | | | | 305 | |
| aaa | cca | tgg | ctt | tta | gag | gtc | aac | tac | agc | cca | gcc | ttg | acc | ttg | gat | 1017 |
| Lys | Pro | Trp | Leu | Leu | Glu | Val | Asn | Tyr | Ser | Pro | Ala | Leu | Thr | Leu | Asp | |
| | | | 310 | | | | | | 315 | | | | | | 320 | |
| tgt | tca | aca | gat | gtg | ttg | gtg | aag | aga | aaa | ctt | gtc | cat | gat | att | att | 1065 |
| Cys | Ser | Thr | Asp | Val | Leu | Val | Lys | Arg | Lys | Leu | Val | His | Asp | Ile | Ile | |
| | | | 325 | | | | | | 330 | | | | | | 335 | |
| gac | ctg | att | tac | tta | aat | ggt | cta | aga | aat | gag | ggg | aga | gaa | gcc | agt | 1113 |
| Asp | Leu | Ile | Tyr | Leu | Asn | Gly | Leu | Arg | Asn | Glu | Gly | Arg | Glu | Ala | Ser | |
| 340 | | | | | | 345 | | | | | | 350 | | | 355 | |
| aat | gcc | aca | cat | gga | aat | tcc | aac | atc | gac | gct | gca | aaa | agt | gac | aga | 1161 |
| Asn | Ala | Thr | His | Gly | Asn | Ser | Asn | Ile | Asp | Ala | Ala | Lys | Ser | Asp | Arg | |
| | | | 360 | | | | | | 365 | | | | | | 370 | |
| ggt | ggg | ctt | gat | gct | cct | gac | tgt | ctt | cct | tat | gat | tct | ctt | tcg | ttc | 1209 |
| Gly | Gly | Leu | Asp | Ala | Pro | Asp | Cys | Leu | Pro | Tyr | Asp | Ser | Leu | Ser | Phe | |
| | | | 375 | | | | | | 380 | | | | | | 385 | |
| aca | agc | aga | atg | tac | aac | gag | gat | gac | tct | gtg | gtg | gag | aaa | gct | gtg | 1257 |
| Thr | Ser | Arg | Met | Tyr | Asn | Glu | Asp | Asp | Ser | Val | Val | Glu | Lys | Ala | Val | |
| | | | 390 | | | | | | 395 | | | | | | 400 | |
| agt | gtg | cgt | cct | gaa | gct | gca | cct | gcc | tcc | cag | ctg | gaa | gga | gag | atg | 1305 |
| Ser | Val | Arg | Pro | Glu | Ala | Ala | Pro | Ala | Ser | Gln | Leu | Glu | Gly | Glu | Met | |
| | | | 405 | | | | | | 410 | | | | | | 415 | |
| agt | ggg | cag | gat | ttt | cat | ctg | tca | aca | agg | gag | atg | cca | caa | agc | aag | 1353 |
| Ser | Gly | Gln | Asp | Phe | His | Leu | Ser | Thr | Arg | Glu | Met | Pro | Gln | Ser | Lys | |
| 420 | | | | | | 425 | | | | | | 430 | | | 435 | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| | 1 | | | 5 | | | 10 | | | 15 | | | | | | |
| cag | tcc | aaa | caa | gaa | aac | ttg | gac | att | gat | gtt | agg | tat | ttg | ata | gca | 454 |
| Gln | Ser | Lys | Gln | Glu | Asn | Leu | Asp | Ile | Asp | Val | Arg | Tyr | Leu | Ile | Ala | |
| | | | | 20 | | | | | 25 | | | | | 30 | | |
| gtt | gac | aga | aga | ggt | ggc | cct | tta | gta | gcc | aag | gag | act | gta | aaa | ctt | 502 |
| Val | Asp | Arg | Arg | Gly | Gly | Pro | Leu | Val | Ala | Lys | Glu | Thr | Val | Lys | Leu | |
| | | | | 35 | | | | 40 | | | | | 45 | | | |
| gcc | gag | gag | ttc | ttc | ctt | tct | act | gag | ggt | aca | gtt | ctt | ggc | ctt | gac | 550 |
| Ala | Glu | Glu | Phe | Phe | Leu | Ser | Thr | Glu | Gly | Thr | Val | Leu | Gly | Leu | Asp | |
| | | 50 | | | | | 55 | | | | | 60 | | | | |
| ctc | agt | gga | gac | cct | act | gta | gga | caa | gca | aaa | gac | ttc | ttg | gaa | cct | 598 |
| Leu | Ser | Gly | Asp | Pro | Thr | Val | Gly | Gln | Ala | Lys | Asp | Phe | Leu | Glu | Pro | |
| | 65 | | | | | 70 | | | | | 75 | | | | | |
| ctt | tta | gaa | gct | aag | aaa | gca | ggt | ctg | aag | tta | gca | ttg | cat | ctt | tca | 646 |
| Leu | Leu | Glu | Ala | Lys | Lys | Ala | Gly | Leu | Lys | Leu | Ala | Leu | His | Leu | Ser | |
| | 80 | | | | 85 | | | | | 90 | | | | | 95 | |
| gag | att | cca | aac | caa | aaa | aaa | gaa | aca | caa | ata | ctc | ctg | gat | ctg | ctt | 694 |
| Glu | Ile | Pro | Asn | Gln | Lys | Lys | Glu | Thr | Gln | Ile | Leu | Leu | Asp | Leu | Leu | |
| | | | | 100 | | | | | 105 | | | | | 110 | | |
| cct | gac | aga | atc | ggg | cat | gga | aca | ttt | ctc | aac | tcc | ggt | gag | gga | gga | 742 |
| Pro | Asp | Arg | Ile | Gly | His | Gly | Thr | Phe | Leu | Asn | Ser | Gly | Glu | Gly | Gly | |
| | | | | 115 | | | | 120 | | | | | 125 | | | |
| tcc | ctg | gat | ctg | gtg | gac | ttt | gtg | agg | caa | cat | cgg | ata | cca | ctg | gaa | 790 |
| Ser | Leu | Asp | Leu | Val | Asp | Phe | Val | Arg | Gln | His | Arg | Ile | Pro | Leu | Glu | |
| | | 130 | | | | | 135 | | | | | 140 | | | | |
| ctc | tgt | ttg | acc | tca | aac | gtc | aaa | agt | cag | aca | gtt | cca | tct | tat | gac | 838 |
| Leu | Cys | Leu | Thr | Ser | Asn | Val | Lys | Ser | Gln | Thr | Val | Pro | Ser | Tyr | Asp | |
| | 145 | | | | | 150 | | | | | 155 | | | | | |
| cag | cac | cat | ttc | gga | ttc | tgg | tac | agc | att | gcc | cat | cct | tct | gtg | atc | 886 |
| Gln | His | His | Phe | Gly | Phe | Trp | Tyr | Ser | Ile | Ala | His | Pro | Ser | Val | Ile | |
| | 160 | | | | 165 | | | | | 170 | | | | | 175 | |
| tgt | act | gat | gat | aag | ggt | gtt | ttt | gca | aca | cac | ctt | tct | caa | gag | tac | 934 |
| Cys | Thr | Asp | Asp | Lys | Gly | Val | Phe | Ala | Thr | His | Leu | Ser | Gln | Glu | Tyr | |
| | | | | 180 | | | | 185 | | | | | | 190 | | |
| cag | ctg | gca | gct | gaa | aca | ttt | aat | ttg | acc | cag | tct | cag | gtg | tgg | gat | 982 |
| Gln | Leu | Ala | Ala | Glu | Thr | Phe | Asn | Leu | Thr | Gln | Ser | Gln | Val | Trp | Asp | |
| | | | 195 | | | | | 200 | | | | | 205 | | | |
| ctg | tct | tat | gaa | tcc | atc | aac | tac | atc | ttt | gct | tct | gac | agc | acc | aga | 1030 |
| Leu | Ser | Tyr | Glu | Ser | Ile | Asn | Tyr | Ile | Phe | Ala | Ser | Asp | Ser | Thr | Arg | |
| | | 210 | | | | | 215 | | | | | 220 | | | | |
| tct | gaa | ctg | agg | aag | aaa</ | | | | | | | | | | | |

